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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,807	09/08/2003	Li Cai	1010.8117UU	1164

38846 7590 04/07/2005

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EXAMINER

PAK, SUNG H

ART UNIT PAPER NUMBER

2874

DATE MAILED: 04/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/657,807	CAI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Sung H. Pak	2874	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) 36-49 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>0903</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-35, drawn to an optical device, classified in class 385, subclass 31.
- II. Claims 36-49, drawn to method of making an optical device, classified in class 385, subclass 129.

The inventions are distinct, each from the other because of the following reasons:

Inventions Group II and Group I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially difference process, such as placing pre-fabricated layers of optical device material without removing materials to form ridge waveguides.

Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.

During a telephone conversation with Iain McIntyre on 4/01/2005 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-35. Affirmation of this election must be made by applicant in replying to this Office action. Claims 36-49 are

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withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

#### ***Information Disclosure Statement***

Information disclosure statement filed 9/08/2003 has been considered by the examiner.

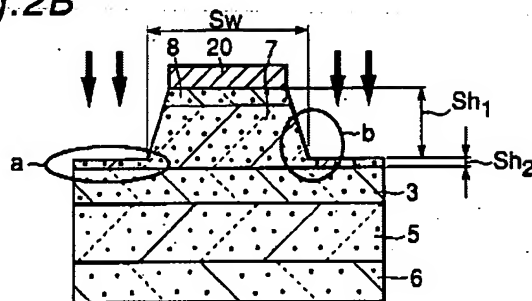
#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4, 11, 19-22, 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Matsumura (US 2003/0128729 A1).

**Fig.2B****Fig.2C****Fig.2D**

Matsumura discloses an optical device with all the limitations set forth in the claims, including: a substrate (Fig. 2B); first and second semiconductor side regions formed over the substrate, a height of the first side region above the substrate (Fig. 2C) being different from a height of the second side region above the substrate (Fig. 2D); a semiconductor ridge disposed between the first and second side regions and over the substrate forming an optical waveguide within the device defining a fundamental optical mode, a height of the semiconductor ridge above the substrate being greater than the heights of the first and second side regions above the substrate (Fig. 2B, paragraph 0095); first and second sides of the optical waveguide providing optical confinement in the lateral direction, the optical confinement for the fundamental mode provided on the first side of the optical waveguide being different from the optical confinement provided on the second side of the waveguide (paragraph 0095); an active semiconductor region formed between the ridge and the substrate, the ridge guiding light amplified in the active semiconductor region (abstract); an electrode disposed over the ridge to inject current into the ridge (Fig. 7A-7D); wherein the device comprises a semiconductor laser (abstract); wherein the first and second side regions define an average side region height above the substrate, and a kink current of the alser is higher than where the heights of the first and second side regions above the substrate are both equal to the average side region height (paragraph 0095); at least one bond pad

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disposed on at least portion of the first and second side regions, an electrode over the ridge being electrically coupled to the at least one bond pad, and a submount attached to the substrate, the submount being coupled to a laser carrier (Fig. 8).

***Claim Rejections - 35 USC § 103***

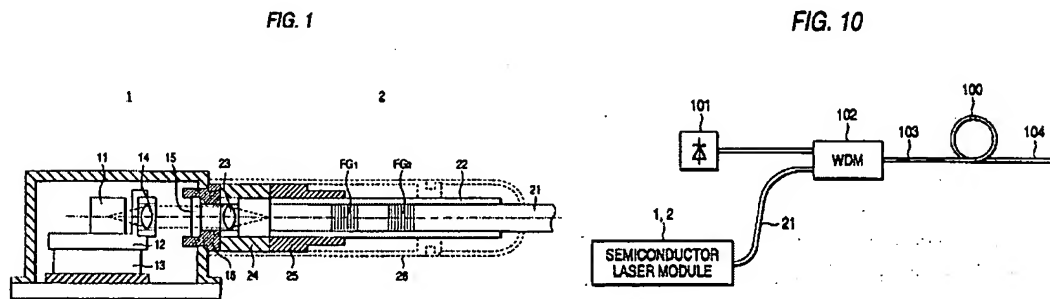
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 5-6, 9-10, 12-15, 23-24, 27-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamakawa et al (US 5,993,073) in view of Matsumura (US 2003/0128729 A1).

Hamakawa discloses an optical device with all the limitations set forth in the claims, except it does not explicitly teach the use of asymmetric ridge waveguide laser as claimed in the instant application.



Specifically, Hamakawa teaches: an optical transmitter ('1'- Fig. 1); a fiber optic link coupled to receive optical signals from the optical transmitter ('21'- Fig. 1); an optical receiver coupled to the fiber optic link to receive the optical signal (not explicitly shown but receiver device is inherently disclosed- column 1 lines 3-54); a laser coupled to inject light into the fiber optic link ('11' Fig. 1); wherein the laser is disposed within the optical transmitter (Fig. 1); wherein the fiber optic link includes at least one fiber amplifier unit having a length of fiber amplifier, the at least one fiber amplifier unit including the laser coupled to inject pump light into the length of fiber amplifier (Fig. 10; column 5 lines 54- column 6 lines 25); wherein the laser includes a frequency selector selecting output wavelength of pump light generated by the laser ('FG1, FG2' Fig. 1); wherein the selector is a Bragg grating (column 4 lines 7-17); wherein the laser is thermally coupled to a thermoelectric cooler ('13' Fig. 1).

On the other hand, Matsumura explicitly teaches an asymmetric ridge waveguide laser with limitations set forth in the claims as discussed above. Matsumura teaches that such a waveguide laser device is advantageous over the prior art device because it allows stable control

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of transverse mode and is capable of emitting laser beam of excellent FFP (far field pattern) with less variations in the device characteristics even when mass produced (paragraph 0012).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the Hamakawa device to have asymmetric ridge waveguide laser of Matsummura.

Claims 8, 16-18, 26, 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamakawa et al (US 5,993,073) and Matsumura (US 2003/0128729 A1) as applied to claims above, and further in view of Mizrahi (US 5,673,129).

Hamakawa and Matsummura render all the recited limitations of the claims obvious as discussed above, except they do not explicitly teach: the use of control circuitry to control and modulate operation of one or more transmitter lasers in response to incoming information; and multiplexer and demultiplexer, multiplexing signals of at least two transmitter lasers having different wavelengths, and demultiplexing that signal to component signals that are received by respective detectors.

Mizrahi, on the other hand, explicitly teaches the use of control circuitry to control and modulate operation of one or more transmitter lasers in response to incoming information (abstract; Fig. 2A), and multiplexer and demultiplexer (Fig. 2A, Fig. 2C), multiplexing signals of at least two transmitter lasers having different wavelengths, and demultiplexing that signal to component signals that are received by respective detectors.

The use of control circuitry is considered advantageous and desirable in the art, because it allows for accurate and precise fine-tuning of transmission light signal, and limits transmission



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error. The use of multiplexers and demultiplexers are considered advantageous and desirable in the art because they allow multiple transmission signals to be transmitted over a common transmission line, which increases transmission efficiency and bandwidth.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the Hamakawa device in view of Matsumura and Mizrahi references to have control circuitry, multiplexer and demultiplexer as claimed in the instant application.

### ***Conclusion***


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 20040201031A1, US 20040101986A1, US 20040047381A1, and US 20040001325A1 disclose semiconductor ridge waveguide lasers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sung H. Pak whose telephone number is (571) 272-2353. The examiner can normally be reached on Monday- Friday, 9AM-5PM.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sung H. Pak  
Examiner  
Art Unit 2874

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